T04D04 – 4.2 IB Practice

Name……

1. (i) State the shape of the electron distribution around the oxygen atom in the water molecule and state the shape of the molecule.

(2)

(ii) State and explain the value of the HOH bond angle.

(2)
(Total 4 marks)

2. Explain why the bonds in silicon tetrachloride, $SiCl_4$, are polar, but the molecule is not.

(Total 2 marks)

3. (a) Draw the Lewis structure of methanoic acid, HCOOH.

(1)

(b) In methanoic acid, predict the bond angle around the

(2)

(i) carbon atom. .....

(ii) oxygen atom bonded to the hydrogen atom. .....

(c) State and explain the relationship between the length and strength of the bonds between the carbon atom and the two oxygen atoms in methanoic acid.

(3)
(Total 6 marks)

4. Diamond, graphite and C_{60} fullerene are three allotropes of carbon.

(i) Describe the structure of each allotrope.

(3)

(ii) Compare the bonding in diamond and graphite.

(2)
(Total 5 marks)